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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/550,600	09/23/2005	Norbert Erhardt	66489-071-7	1969

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EXAMINER	
MIDKIFF, ANASTASIA	

ART UNIT	PAPER NUMBER
2882	

MAIL DATE	DELIVERY MODE
11/30/2007	PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No.	Applicant(s)	
	10/550,600	ERHARDT ET AL.	
	Examiner	Art Unit	
	Anastasia Midkiff	2882	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *04 September 2007*.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *22,26-31,33 and 34* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☒ Claim(s) *31,33 and 34* is/are allowed.

6)☒ Claim(s) *22,26,27 and 30* is/are rejected.

7)☒ Claim(s) *28 and 29* is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____.
5) ☐ Notice of Informal Patent Application
6) ☐ Other: _____.

DETAILED ACTION

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

Claims 22, 26, 27, and 30 are rejected under 35 U.S.C. 103(a) as being unpatentable over U.S. Patent to Zeller et al. (US 6,055,292) in view of U.S. Patent to Yavus et al. (US 6,292,530 B1).

With respect to Claim 22, Zeller et al. teach an x-ray system (Abstract) having an x-ray sensitive camera (4), comprising:

- a first image detector (18) for the creation of a first panoramic tomographic image (Column 2, Lines 43-46);
- a second image detector (18') in the form of a face sensor (Figure 3) disposed alongside said first image detector in a common casing (Figure 3) for creation of a 2D plane image (Column 2, Lines 43-46);
- means provided for the creation of 3D images of a subvolume of the mandibular arch (Column 5, Lines 1-2), which means creates several 2D images from different directions using cone beam technology (Column 5, Lines 3-6) with a CCD sensor operated in time delay integration with

associated reconstruction algorithms (Column 5 Lines 66-67, and Column 6 Lines 1-37);

- wherein adjustment means (9) are provided for moving, as desired, said second image detector (18') into the optical path of an x-ray emitter (3, Figure 2) for the creation of the respective x-ray image (Column 2 Lines 43-46, and Column 5 Lines 23-41).

Zeller et al. do not teach computing a 3D image from the 2D images.

Yavus et al. teach an x-ray imaging system (Figure 3) wherein a collection of 2D tomosynthesis projection radiographs are transformed into a 3D image of the object using cone beam technology (Abstract, and Column 5, Lines 1-15) to provide images with improved quality of images over typical circular tomosynthesis systems (Column 2, Lines 20-29).

It would have been obvious to one of ordinary skill in the art at the time of the invention to employ cone beam technology algorithms, as demonstrated by Yavus et al., to create 3D images from the 2D images of Zeller et al., to provide the improved image quality of a cone beam VCT system in a less expensive system, as suggested by Yavus et al. (Column 2, Lines 20-43, and Abstract).

With respect to Claim 26, Zeller et al. further teach adjustment means (1) by means of which said camera and an x-ray emitter can be adjusted such that a center of rotation lies in the subvolume to be imaged, said camera and emitter moveable as a unit (Figures 2 and 7).

With respect to Claim 27, Zeller et al. further teach that said adjustments means (9) are disposed in said casing (40) of said camera (Figures 1, 5, and 8).

With respect to Claim 30, Zeller et al. further teach that said camera is mounted for eccentric displacement (Figures 2 and 7) and, in a first position, said image detector (18) is positioned in an x-ray fan beam for the creation of a panoramic tomographic image (Column 2, Lines 43-46), and, in a second position, said image detector (18') is positioned in the x-ray fan beam for the creation of a 3D image (Column 5, Lines 1-15).

Allowable Subject Matter

Claims 31, 33, and 34 are allowed.

Claims 28 and 29 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

The following is a statement of examiner's reasons for indicating allowable subject matter:

With respect to Claim 28, the prior art of record teaches most of the elements of the claimed invention, including an x-ray system having an x-ray sensitive camera, comprising: a first image detector for the creation of a first panoramic tomographic image; a second image detector in the form of a face sensor disposed alongside said first image detector in a common casing for creation of a 2D plane image; means provided for the creation of 3D images of a subvolume of the mandibular arch, which means creates several 2D images from different directions and compute a 3D image

therefrom using cone beam technology with associated reconstruction algorithms; wherein adjustment means are provided for moving, as desired, said second image detector into the optical path of an x-ray emitter for the creation of the respective x-ray image.

However, prior art fails to teach or fairly suggest the system wherein there is additionally an installation for the creation of teleradiographic images with another image detector so that when said x-ray emitter is aligned for the creation of a teleradiographic image, said camera is disposed in the region of the optical path between said emitter and said image detector of said installation for the creation of teleradiographic images and is radiolucent in said region of optical path, in the manner required by Claim 28.

With respect to Claim 29, the prior art of record teaches most of the elements of the claimed invention, including an x-ray system having an x-ray sensitive camera, comprising: a first image detector for the creation of a first panoramic tomographic image; a second image detector in the form of a face sensor disposed alongside said first image detector in a common casing for creation of a 2D plane image; means provided for the creation of 3D images of a subvolume of the mandibular arch, which means creates several 2D images from different directions and compute a 3D image therefrom using cone beam technology with associated reconstruction algorithms; wherein adjustment means are provided for moving, as desired, said second image detector into the optical path of an x-ray emitter for the creation of the respective x-ray image.

However, prior art fails to teach or fairly suggest the system wherein there is additionally an installation for the creation of teleradiographic images with another image detector so that when said x-ray emitter is aligned for the creation of a teleradiographic image, said camera is moved out of the optical path between said emitter and said image detector of said installation for the creation of teleradiographic images, in the manner required by Claim 29.

With respect to Claim 31, prior art teaches most of the elements of the claimed invention, including an x-ray system having an x-ray sensitive camera, comprising: a first image detector for the creation of a tomographic image; a second image detector disposed alongside said first image detector in a common casing for creation of a plane image; wherein adjustment means are provided for moving, as desired, said second image detector into the optical path of an x-ray emitter for the creation of the respective x-ray image.

However, prior art fails to teach or fairly suggest the system wherein said second image detector is disposed on a rear side of said first image detector, in the manner required by Claim 31.

Claims 33 and 34 are allowed by virtue of their dependency upon Claim 31.

Conclusion

The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

U.S. Patent Documents to: Tam (US 5,257,183 and US 6,574,297 B2), Hseih (US 6,678,346 B2), Yang (US 2003/0072406 A1), and Nelson (US 2003/0210814 A1) teach cone beam technology imaging methods and/or algorithms.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Anastasia Midkiff whose telephone number is 571-272-5053. The examiner can normally be reached on M-F 7-4.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Edward Glick can be reached on 571-272-2490. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

ASM
11/25/07

EDWARD J. GLICK
SUPERVISORY PATENT EXAMINER